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NOTES FROM PACIFIC COAST OBSERVATORIES.

Orbit of the Spectroscopic Binary θ Draconis.[1]

The binary nature of this star was discovered by Director CAMPBELL and announced in 1899. In the interval from March, 1898, to July, 1904, thirty-two plates were secured that could be used to measure the radial velocity of the star. These were all measured by the writer at Mt. Hamilton, and from the results preliminary elements were computed graphically by the formulæ of LEHMANN-FILHÉS. These elements were corrected differentially by a least-squares solution which gave the following set of final elements :—

$$Period = 3.0708 \quad \pm\ 0.000032 \text{ days}$$
$$e = 0.0141 \quad \pm\ 0.0166$$
$$T = J.\ D.\ 2415368.962 \quad \pm\ 0.499 \text{ days}$$
$$\omega = 126°.112 \quad \pm\ 58°.6$$
$$k = 23.47 \quad \pm\ 0.324$$

Velocity of system $= -\ 8.36^{km} \quad \pm\ 0.30^{km}$
$$a \sin i = 9,900,000^{km}.$$

SANTIAGO, CHILE, June, 1907.　　　　　HEBER D. CURTIS.

The Orbits of the Spectroscopic Binaries a CARINÆ, κ VELORUM, AND a PAVONIS.

The binary character of a Carinæ and κ Velorum was detected by Professor W. H. WRIGHT in the course of the work of the D. O. Mills Expedition to the Southern Hemisphere. The binary character of a Pavonis was also suspected by him from preliminary measures of the first four plates taken, and was independently discovered from the definitive reductions of the same plates by Dr. S. ALBRECHT.

The three stars are of the same general spectral type described as Type B 3 A in the Harvard classification. In

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[1] The details of this orbit are published in *Lick Observatory Bulletin*, No. 122.

the part of the spectrum covered by the spectroscope of the Mills reflector, only six lines are measurable. It is the opinion of the writer that the application of the method of least squares to stars of this type of spectrum and number of lines is not warranted except in the case that a large number of observations are available, extending over a long interval of time. Preliminary elements were therefore first derived graphically by the formulæ of LEHMANN-FILHÉS. Changes were then made in the derived elements, after comparing with the curve given by the observations, and several sets of elements tested by the observation values. With some experience in this method it is possible in a relatively short time to test and change the elements given by the graphical solution until the resulting values would be little if any bettered by a least-squares solution.

By such methods the following sets of elements were derived :—

	a Carinæ.	κ Velorum.	a Pavonis.
Period =	6.744 days	116.65 days	11.753 days
$e =$	0.18	0.19	0.01
$k =$	21.5	46.5	7.25
$T =$	J. D. 2416533.81	2416459.00	2416379.90
$\omega =$	115°.84	96°.23	224°.80
Velocity of system } =	$+ 23.3^{km}$	$+ 21.9^{km}$	$+ 2.0^{km}$
$a \sin i =$	1,960,000^{km}	73,200,000^{km}	1,170,000^{km}

Details of the observations and residuals are given in *Lick Observatory Bulletin*, No. 122.

HEBER D. CURTIS.

THE D. O. MILLS EXPEDITION,
SANTIAGO, CHILE, June, 1907.

NOTE ON COMET *e* 1907 (MELLISH).

Comet *e* 1907 was discovered on the morning of October 14th by JOHN E. MELLISH, of Cottage Grove (near Madison), Wisconsin, in R. A. 8^h 31^m, Decl. —9° 24'. It was visible with an opera-glass.

From the first three available observations (October 15th, by HARTWIG, at Bamberg; October 16th, 17th, by DUNCAN, at Mt. Hamilton) a preliminary orbit was computed by Professor CRAWFORD, Miss GLANCY, and Miss MORGAN. The elements and an ephemeris are given in *Lick Observatory Bulletin*, No. 121.